WEATHER SATELLITE RECEIVER　　SU-18

(FLOPPY DISK VER. NO. 085-0122-016)

OPERATOR'S GUIDE

BASIC OPERATING PROCEDURE

(*) Confirmation necessary to receive picture properly.

DATA ANALYSIS

OTHER FUNCTIONS

ON-SCREEN DATA

DATE/TIME (YR/MO/DA.HR:MIN:SEC)

PRESENT L/L POSITION

WATER TEMPERATURE

PICTURE DATA (particulars of presently displayed picture)

PREDICT (satellite forecast)

リッド線　　カラーバー　　TEMP(°C)

RECEIVING RANGE
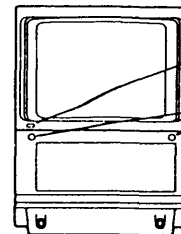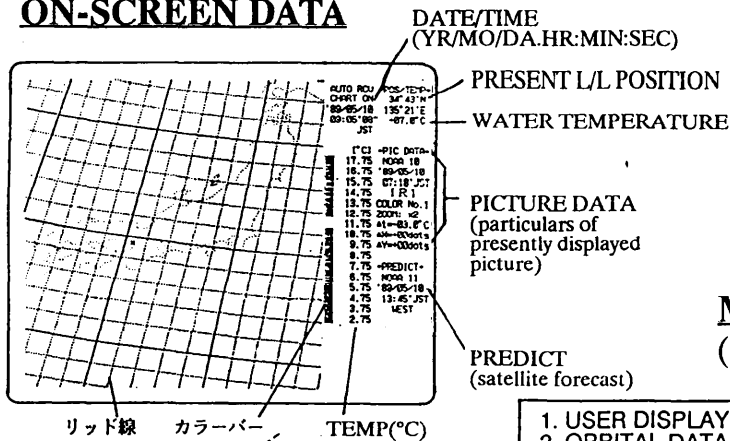
POWER SWITCH

Loosen screws and flip down Keyboard to access FD drive and CMT drive.

MENU
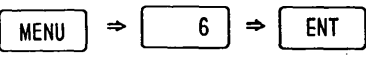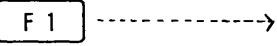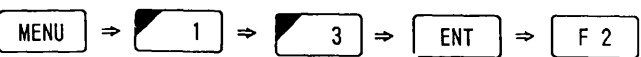
(Press [MENU] key to display menu.)

1. USER DISPLAY	11. RECEIVE PREDICT
2. ORBITAL DATA	12.
3. DATE/TIME	13. FD SAVE/LOAD
4. POSITION/TEMPERATURE	14. TEMPERATURE CALIBRATION SETTING
5. CMT RECORD	
6. CMT PLAYBACK	15.
7. CHART DATA	16.
8. EVENT DATA	17.
9. USER COLOR	18. RTTY RECEIVE CHECK
10. PICTURE PROCESSING	19.
	20. SYSTEM INITIALIZATION
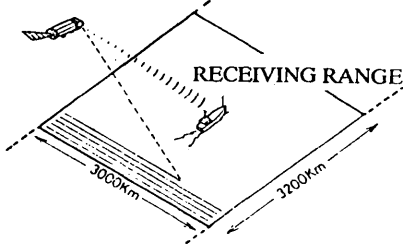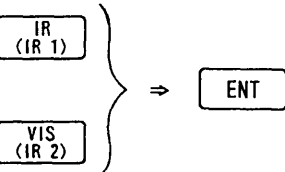
PICTURE PLAYBACK

(Avoid playback when the receiving time is approaching, provided you wish to receive the data.)

PREPARATION	Insert cassette or FD containing the picture to be played back.
	(1) Cassette Tape
CALL UP CMT PLAYBACK MENU	[MENU] ⇒ [6] ⇒ [ENT] [FILE LIST]　FILE No. ☐
TO CONDUCT FILE SEARCH	[F 1] --------→ FILE LIST 1)' 88/12/03 13:33' IR　 2)' 88/12/03 13,J 33' VIS 4)' 88/12/03 18:16' VIS　5)' _/_/_ _:_ _ 7)' _/_/_ _:_' ___8)' _/_/_ _:_ _ [FILE LIST]　FILE No. ☐
SPECIFY FILE NUMBER	Specify File No. ⇒ [ENT] (VIS: Visible-light, IR: Infrared) [FILE PLAYBACK] ⇒ [PICTURE PROCESSING] ⇒ [GRID CALCULATION] (Messages displayed during play back process) If, for example, file no.4 ('88/12/03 18:16', visible-light picture) is selected, it is transferred to the memory bank which is displayed at the right-hand side of the screen. At that time, existing chart/event data in the memory is replaced with those of picture to be played back. (2) FD
TO LOAD FD	[MENU] ⇒ [1] ⇒ [3] ⇒ [ENT] ⇒ [F 2]

PICTURE SELECTION

INFRARED	[IR (IR 1)]
	⇒ [ENT]
VISIBLE-LIGHT	[VIS (IR 2)]

PICTURE DISPOSAL

SHIFTING

| IMAGE | ⇒ { ↑ ← → ↓ }
(right side of keyboard)

(□ key [below + key] returns own ship mark to screen center.)

ENLARGING/ CONTRACTING

▶◀ Enlarge

(× 0.5)   (× 1)   (× 2)   (× 3) − − − − − (× 16)

▶◀ Contract (to alternate ×1 → ×0.5, SHIFT + ▶◀)
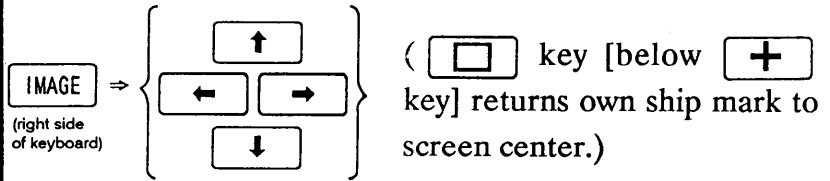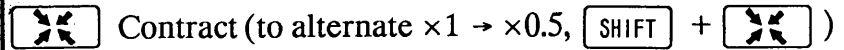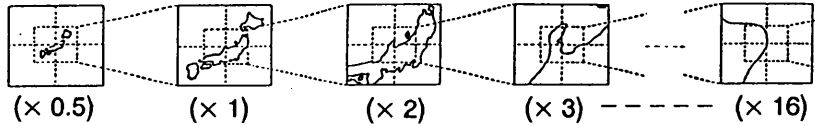
NOTE: To enlarge a specific area, place the cross cursor on the area desired, then press ▶◀ . (Cross cursor not operative in × 0.5 zoom.)
To turn cross cursor off, press IMAGE key (right side of keyboard).

SETTING TEMPERATURE RANGE (Infrared picture)

SPECIFY BASIC RANGE
(2°C step: 32°C width)

16 /2° ⇒ { ▲ N ▼ S } ⇒ ENT

(Each press shifts display range up or down by 0.25°C.)

48°C

[°C]
30.00
28.00
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00

▲N
▼S
shift

(32°C temperature range can be moved anywhere within −16°C to + 48°C.)
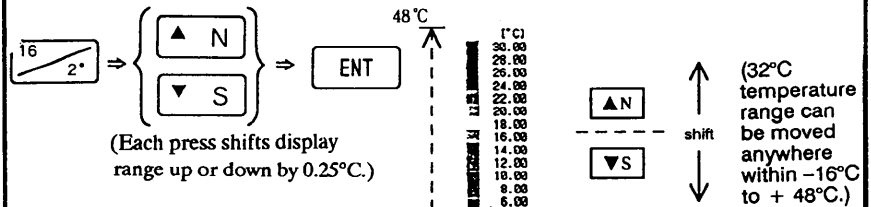
SPECIFY ENHANCEMENT RANGE
1°C step (16°C width)

32 /1°

0.5°C step (8°C width)

64 /.5°

⇒ { ▲ N ▼ S } ⇒ ENT

−16°C

(Each press shifts display range up or down by 0.25°C.)

[°C]   (Ex.)
23.00   1°C step
22.00

9.00
8.00

Color Bar

0.25°C step (4°C width)

SHIFT + 64 /.5°
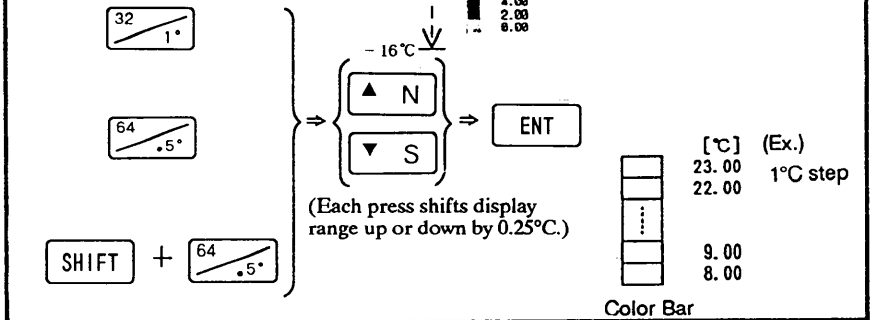
VISIBLE-LIGHT PICTURE SHADE RANGE

ENHANCEMENT SHADE RANGE

32 SHADES

32 /1°

64 SHADES

64 /.5°

128 SHADES

SHIFT + 64 /.5°

⇒ { ▲ N ▼ S } ⇒ ENT

(Each press shifts level by one.)

WEAK REF.
OCEAN ▲ BLK
LAND
CLOUD
ICE, SNOW, THICK CLOUDS
STRONG REF.
WHT

192
184
176
168
:
096
088
080
072

▲N
▼S

EX: 32 SHADE

14
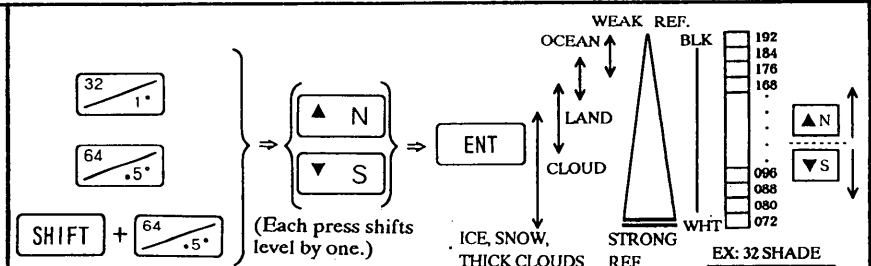
COLOR BAR SELECTION

PICTURE

COLOR SEL [IMAGE] ⇒ { [1] ₹ [9] [0] } ⇒ [ENT]
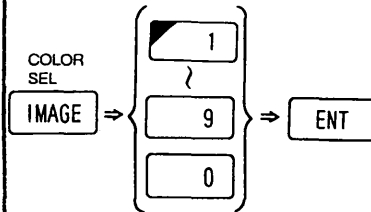
1. Cool-to-warm color (1)
2. Complementary color (1)
3. Complementary color (2)
4. Cool-to-warm color (2)
5. White-to-yellow (one shade only)-to-gray shade
6. White-to-gray shade
7. White-to-gray-to-blue color
8. Blue-to-yellow (one shade only)-to-reddish brown color
9. Blue-to-light blue, green, yellow, brown, and red-to-reddish brown color
0. User color

(For user color, see below.)

Shifting color bar

[SHIFT] + { [▲ N] ---- shift bar upward
           [▼ S] ---- shift bar downward }
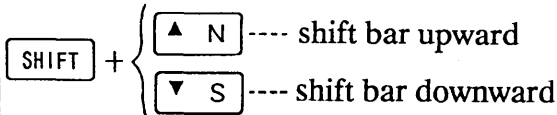
GRID

[GRID]

CHART/EVENT/ OWN SHIP (× mark)

[CHART EVENT]

CURSOR (+)

[□]

(left side of keyboard)

} ⇒ { [1] ₹ [9] } ⇒ [ENT]
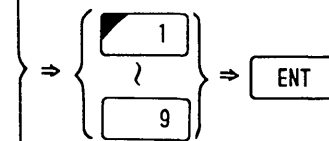
1: RED	2: GRN	3: BLU
4: WHT	5: YEL	6: PPL
7: CYN	8: BLK	9: GRY

USER COLOR BAR SETTING

COLOR SELECTION

COLOR SEL [IMAGE] ⇒ { [1] ₹ [9] } ⇒ [ENT]
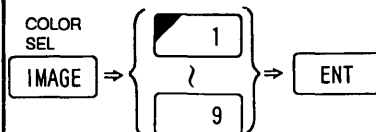
(Select color which best approximates picture color arranement.)

CALL UP USER COLOR MENU

[MENU] ⇒ [9] ⇒ [ENT]

[LOAD FD] [SAVE FD] [MANUAL ENT]
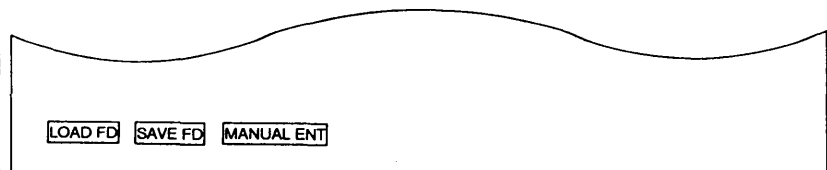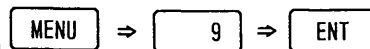
TO GO TO USER COLOR SETTING SCREEN

[F 3] (manual entry)
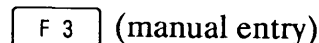
MIXING PRIMARY COLORS (R/G/B)

① This arrow points to the color whose primary colors presently can be mixed.

These keys shift the arrow.
$$\begin{cases} \text{UP---} \boxed{\blacktriangle \ N} \\ \text{DOWN--} \boxed{\blacktriangledown \ S} \end{cases}$$

② Numeral keys 1~6 are used to select the degree of mixing of primary colors (R,G,B).

```
[°C]  *PIC I
←17.75  NOAA
 16.75  '89/05
 15.75  07:18
 14.75    I R
 13.75  COLOR
 12.75  ZOOM:
 11.75  Δt=-0
 10.75  ΔX=+
  9.75  ΔY=+
  8.75
  7.75  *PREL
  6.75  NOAA
  5.75  '89/0
  4.75  13:45
  3.75  WES
  2.75

  R  G  B
 12 10  5
```

$\boxed{\text{RED}/1}$ / $\boxed{/4}$ ▲▼ --→ R (changes degree of mixing of red color)

$\boxed{\text{GRN}/2}$ / $\boxed{5}$ ▲▼ --→ G (changes degree of mixing of green color)

$\boxed{\text{BLU}/3}$ / $\boxed{6}$ ▲▼ --→ B (changes degree of mixing of blue color)

Arrow points to primary color which presently can be mixed by operating corresponding numeral keys (1~6).

(EX.)
Pressing of $\boxed{2}$ key moves the arrow on the "G" mark, then strength of green color can be varied with $\boxed{2}$ and $\boxed{5}$ keys.

If R, G, B levels are 0, 0, 0 (or 15, 15, 15), the color becomes black (or white).

TO SAVE COLOR BAR	$\boxed{\text{ENT}}$ (Color bar is registered under the number "0".) Although color bar arrangement is retained in the memory when the power is turned off, it is a good idea to store this information on a floppy disk, as follows.
TO DISPLAY SAVED COLOR BAR	COLOR SEL $\boxed{\text{IMAGE}}$ ⇒ $\boxed{0}$ ⇒ $\boxed{\text{ENT}}$
TO SAVE TO FD	$\boxed{\text{MENU}}$ ⇒ $\boxed{9}$ ⇒ $\boxed{\text{ENT}}$ ⇒ $\boxed{\text{F 2}}$
TO LOAD FD	$\boxed{\text{MENU}}$ ⇒ $\boxed{9}$ ⇒ $\boxed{\text{ENT}}$ ⇒ $\boxed{\text{F 1}}$

PICTURE PROCESSING (INT. REJ/TEMP. CONTOUR)

CALL UP PICTURE PROCESSING MENU	[MENU] ⇒ [1] ⇒ [0] ⇒ [ENT]
	[INT REJ] [TEMP CONTOUR]
TO REDUCE INTERFERENCE	[F 1] ------> On-screen interference is reduced.
	(× 0.5 zoom .... Approx. 10 min.)
	(others .... 2 to 3 min.)
TO PAINT TEMPERATURE CONTOUR	[F 2] ------> Temperature contour is painted using presently selected temperature interval.
	PICTURE PROCESSING
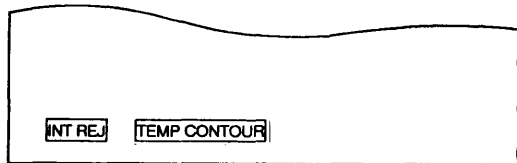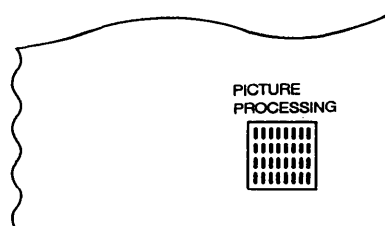
AUTO PRINT MODE SETTING

(After receiving is completed, the picture is printed out automatically [in 10 different types at max.] if auto print mode is turned on.)

CALL UP SYSTEM INITIALIZATION MENU	[MENU] ⇒ [2] ⇒ [0] ⇒ [ENT]
TO SET AUTO PRINT MODE (maximum 10 pages; 1/10~10/10)	[F 2]
	1/10 PAGE
	PRINT ON [OFF]
	NO. OF PRINTS 1
	PICTURE IR VIS
	STEP 2.0 1.0 0.5 0.25 °C
	CTR TEMP +16.0 °C (1.0~33.0 °C)
	CTR OF PIC OWN SHIP LAT/LON
	LAT 00° 00' N
	LON 000° 00' E
	ZOOM ×0.5 1 2 3 4 5 -----------16
	COLOR BAR No.6
	PIC PROC ON OFF
	INT REJ TEMP CONTOUR
	[PRCDNG PAGE] [NEXT PAGE] [SAVE FD] [LOAD FD]
SET EACH MODE	[↑] [←] [→] [↓] Locate the cursor intersection on the mode desired, by operating the arrow keys. ⇓ Selected items are underlined.
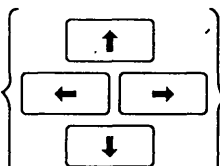
	NOTE: 1. Enter no. of prints, center temperature and latitude and longitude data by using numeral keys.
	2. When "VIS" is selected.

PICTURE   IR   VIS (00 : 00~00 : 00) — Time range

SHADE   16 32 64 128

CENTER   136 (136)

Time range

Visible-light pictures received within this time range (daylight hours, ex. 09:00~16:00) are printed.

Range of center value (shade setting-dependent)

3. When "picture processing" is selected.
Press [↓] ;

PIC PRCC   ON   OFF

[INT REJ] [TEMP CONTOUR]

[PRCDNG PAGE] [NEXT PAGE] [SAVE FD] [LOAD FD] [ON/OFF]

Function key [F 5] (ON/OFF) turns the presently selected picture processing function (Int. Rej or Temp. contour) on and off. (Interference rejection and temperature contour can be turned on concurrently.)

Once the picture processing is turned on, the picture processed can not be restored to its original conditions.

(EX.)
Page	Setting	Picture on the screen
1/10	INT REJ: ON ⟶	INT REJ: ON
2/10	INT REJ: OFF ⟶	INT REJ: ON

If interferance rejection is set to "ON" on page 2/10 as well, interference rejection is executed doubly on that page.

4. When several pages are set for "PRINT ON", the finally displayed picture is set up according to the conditions set for the highest page number.
(Ex.)   1/10, 2/10, 4/10 ----- "PRINT" : ON
⇓
The finally displayed picture is set up in accordance with the conditions set for page 4/10.

TO GO TO NEXT PAGE	[F 2] ---------------> Setting procedure is the same as that for the page 1/10.
TO GO TO PRECEDING PAGE	[F 1]
TO SAVE TO FD	[F 3] (pages 1/10 to 10/10)
TO LOAD FD	[F 4]
TO RETURN CONTROL TO LAST USED DISPLAY SCREEN	[ENT] ⇒ [ESC] ⇒ [ESC]

CHANGING PICTURE DISPLAY MODE

CALL UP USER DISPLAY MENU	[MENU] ⇒ [1] ⇒ [ENT] SELECT USER DISPLAY No. ☐
SELECT DISPLAY MODE	Specify number (1~10) ⇒ [ENT] ↓ Page number of Auto Print Mode The presently displayed picture is immediately set up according to the conditions of the page number selected.
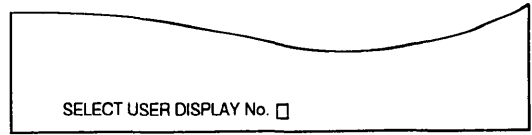
PRINTING

CONFIRMATION	(1) Printing paper and ink sheet are correctly set. (2) Printer and printer I/F are turned on. (3) No printer error messages are displayed.

STARTING PRINTING	[PRINT] - - - - - - - - ->
	
	 · NUMBER OF PRINTS ?
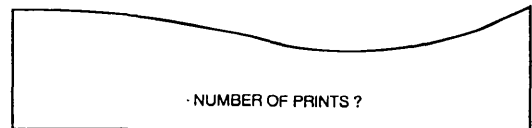	
	 Specify no. of prints ([1] ~ [9])
	
	 ↓
	 [2] ⇒ [ENT] - - - - - > PRINTING Transmission time of 32 bit data is counted down on-screen, and takes approx. 4 min to complete. To cancel printing, press [F6].
	 (For one (1) print,
	 simply hit [ENT].)
	
	 ‖‖‖‖‖‖‖‖
	 ‖‖‖‖‖‖‖‖
	 ‖‖‖‖‖‖‖‖
	 ‖‖‖‖‖‖‖‖
	
	 NOTE: 1. All keys except for [F 6] (cancels printing) are inoperative during transmission.
	        2. After transmission is completed, printing is completed in;
	
	       SU − 182 SU − 806
	       2.5 min. 4.5 min.

PLOTTING CHART/EVENT DATA

1) CHART DATA: Save chart data (max. 1024 pts.) onto FD.
2) EVENT DATA: Such as current rip, typhoon, etc. (max. 200pts.)

BEFORE PLOTTING CHART DATA, ERASE CHART DATA STORED IN THE MEMORY.	[MENU] ⇒ [7] ⇒ [ENT] [LOAD FD] [SAVE FD] [MANUAL ENT] [ERASE CHART] [F 4] (Erase chart) __(1) Input by L/L Position__
PREPARATION	Prior to entering L/L data, record it in a log.
CHART DATA	[MENU] ⇒ [7] ⇒ [ENT] ⇒ [F 3] [CHART PLOT] 34° 40′ N _ _ . _ _ ′ _ ? 135° 20′ E _ _ . _ _ ′ _ ? Entry of data must begin within 15 sec., otherwise the screen will be erased.
EVENT DATA	[MENU] ⇒ [8] ⇒ [ENT] [EVENT PLOT] 34° 40′ N _ _ . _ _ ′ _ ? 135° 20′ E _ _ . _ _ ′ _ ? Entry of data must begin within 15 sec., otherwise the screen will be erased.
ENTER CO-ORDINATES	Latitude data → [ENT] Longitude data → [ENT] } Buzzer is released every input.
TO EXIT	[ESC] ⇒ [ESC] (For chart data plotting, hit [ESC] three times.)
	__(2) Input by Cross Cursor/Partial Correction (erasure)__ (Cross cursor not operative in × 0.5 zoom.)
PREPARATION	Enlarge desired area. (See page 14.)
CALL UP CROSS CURSOR	[CHART] (Memory) [EVENT] (Memory) ⇓
TO ERASE ALL EVENT DATA	[F 3] (Erase event)
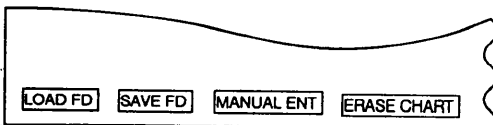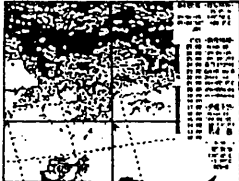
	INPUT	Locate the cross cursor on the desired L/L pos. ----> `F 1`
	ERASE	Locate the cross cursor on the desired L/L pos. ----> `F 2`
TO EXIT		`ESC`

SAVING/LOADING CHART DATA

PREPARATION	Insert FD onto which chart data is to be saved.
CALL UP CHART DATA MENU	`MENU` ⇒ `7` ⇒ `ENT` ----┐ `LOAD FD` `SAVE FD` `MANUAL ENT` `ERASE CHART`
SAVE TO FD	`F 2` (Plotted chart data is saved.) NOTE: To load data from a FD, insert FD containing chart data to be loaded, then press `MENU` ⇒ `7` ⇒ `ENT` ⇒ `F 1`.

READING WATER TEMP. & L/L DATA OF CROSS CURSOR POSITION (inoperative in × 0.5 zoom)

LOCATE CURSOR ON L/L POSITION DESIRED	`+` ⇒ { `↑` `←` `→` `↓` } To erase the cross cursor, press `IMAGE` (above `+` key).
	The L/L position of the cross cursor intersection and water temperature there are displayed at the lower right-hand corner of the screen.
	NOTE: To return the cross cursor to the screen center, press `+` key again.

ERASING ALL CMT DATA (FORMATTING CMT)

PREPARATION	Insert CMT to be erased/formatted. (CMTs equipped with the unit are pre-formatted.)
CALL UP SYSTEM INITIALIZATION MENU	[MENU] ⇒ [2] ⇒ [0] ⇒ [ENT] ------⌐
GO TO NEXT PAGE	[F 6] (Next) ------------>
TO FORMAT/ERASE CMT	[F 2] ⇒ [ENT] (Data stored on the tape, if any, will be erased.)
TO RETURN CONTROL TO LAST USED DISPLAY SCREEN	[ESC] ⇒ [ESC]
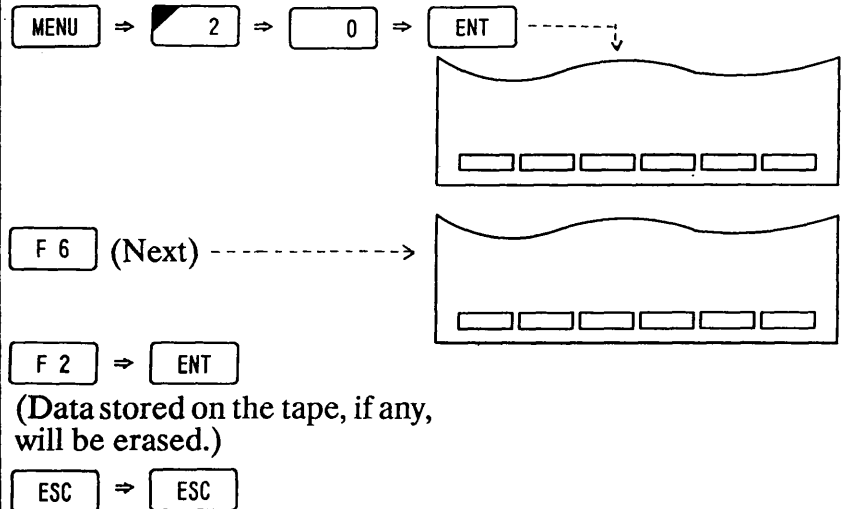
FORMATTING FLOPPY DISK (FD)

PREPARATION	Insert FD to be formatted. (FDs equipped with the unit are pre-formatted.)

There are three ways to format a floppy disk:

1. "System save" function (Ref to page 23)

2. "Copy from FD to FD" function (Ref to page 24)

3. "Floppy disk drive test" in self diagnosis test

[MENU] ⇒ [2] ⇒ [0] ⇒ [ENT] ⇒ [F 6] ⇒ [F 5]

```
SU – 18     TEST  PROGRAM          0850 – 0122 – x x x

  < 1 >  MEMORY
  < 2 >  ACRTC
  < 3 >  DTY
  < 4 >  RFC
  < 5 >
  < 6 >  CMT
      ⋮      ⋮
      ⋮      ⋮
      ⋮      ⋮


                  No. ☐
```

[5] ⇒ [ENT] ⇒ [ENT]

ENTERING NEW SATELLITE DATA

CALL UP ORBITAL DATA MENU	**(1) With all-wave receiver** [MENU] ⇒ ▉ 2] ⇒ [ENT] ------┐
SATELLITE UPDATE	[F 5] ⇒ [ENT] (Spare satellite data is entered into system A or B.)
TO RETURN CONTROL TO LAST USED DISPLAY SCREEN	[ESC] ⇒ [ESC] **(2) Without all-wave receiver** Enter new data, as directed on page 4, making sure to register the number of the new satellite.

ORBITAL DATA

SYSTEM A	SYSTEM B	SPARE SAT	FD A	FD B

[COMMENT DISPL] [SAVE FD] [-LOAD FD.] [MANUAL ENT] [SAT UPDATE]

SYSTEM SAVE

	If you mistakenly initialize a floppy disk containing system program, orbital data, etc., those data in the memory of the unit can be saved to FD by using this function, <u>keeping the power on.</u> Note that once the power is turned off, system program data can not be retrieved to the FD.
CALL UP SYSTEM INITIALIZATION MENU	[MENU] ⇒ ▉ 2] ⇒ [0] ⇒ [ENT]
CALL UP SYSTEM SAVE MENU	[F 6] ⇒ [F 3] --------> ERASE IR BUFFER DATA ?　　YES : ENT ERASE FD.　　　　　　　　　NO　: ESC
TO SAVE SYSTEM DATA TO FD	[ENT] (Data in IR memory is erased.)
TO RETURN CONTROL TO LAST USED DISPLAY SCREEN	[ESC] ⇒ [ESC]

COPY FROM FLOPPY DISK(FD) TO FD

PREPARATION	Insert a source FD containing system data (system program, orbital data, etc.).
CALL UP SYSTEM INITIALIZATION MENU	[MENU] ⇒ [2] ⇒ [0] ⇒ [ENT]
CALL UP COPY MENU	[F 6] ⇒ [F 4] - - - - - - - - - - - - - - → ⌐‾‾‾‾‾‾‾‾‾¬ ERASE IR & VIS DATA ? YES : ENT INSERT SOURCE FD. NO : ESC

LOAD FD DATA TO MEMORIES	[ENT] (Data in IR/VIS memories are erased.)
	
	↓
	"LOADING FD" displayed - - - - - → ⌐‾‾‾‾‾‾‾¬
	                                                        YES : ENT
	INSERT TARGET FD. NO : ESC
	
	                                        ↓
	                          Insert a target FD.

SAVE DATA TO A TARGET FD	[ENT]
	⌐→ "SAVING FD" displayed - - - → ⌐‾‾‾‾‾¬
	                                                     RECOPY ? YES : ENT
	                                                                     NO : ESC

RECOPY TO ANOTHER FD	Insert another target FD. - - → [ENT]
TO FINISH COPY	[ESC] (To return control to last used display screen, press [ESC] three times.)

TEMPERATURE DISPLAY (Infrared picture)

This unit displays temperature colors from -16°C to +48°C. Temperature display within above range is as follows.

⌐ -16°C to +32°C   : Tones from white to white-to-black
⌊ +32°C to +48°C   : Black

> NOTE: Temperatures lower than -16°C and higher than +48°C are displayed in white and black, respectively.

However, when a color bar range (16 colored gradation) is selected, the selected range is displayed in colors according to the picture color number and the other ranges (outside the range of the color bar) are shown in tones and black as mentioned above.

(EX.) In case that color bar range is -8°C to +24°C.

<u>Temp. color on the screen</u>

Black - - - - - - - - - - - - - - - - { ⌐- - +48°C

Tones from white
to white-to-black - - - - - - - - { - - +32°C

Colors according
to picture color - - - - - - - - - { - - +24°C ⌐
number   { - - -8°C   } Color bar range
                                                               (Any picture color number
                                                               except for 5 and 6)
                                             { - - -16°C
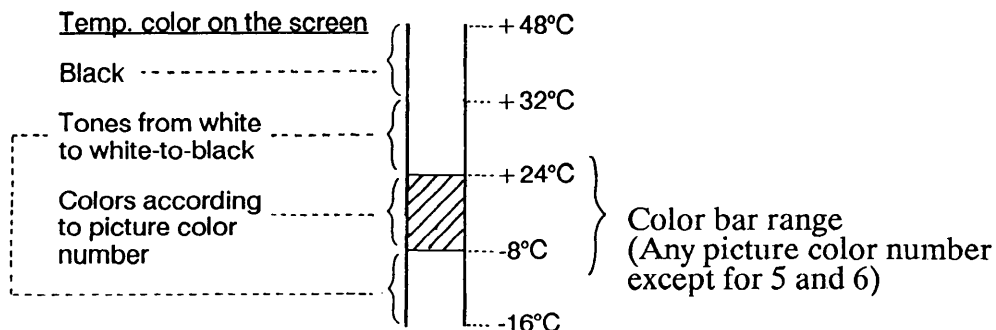
NOTE: Only when picture color number 5 or 6 is selected, temperatures outside the range of the color bar are shown in black and white (not tones).

ENTERING DATA (orbital data, date & time, L/L position, etc.)

Press [ENT] after each line of data entered.

Press [ENT] to retain presently used data.

To clear incorrect data, press [C] - - - - - - - - - -> Entire line of data is erased. (Note however that if the cursor is at the head of a line of data when this key pressed the preceding line is erased.)

FUNCTION KEYS

The function keys, labeled F1~F6 at the top of the keyboard, are used to select a function menu, which is displayed across the bottom of the screen.

(Ex.) The menu below (SYSTEM INITIALIZATION) is displayed following the key strokes of [MENU] ⇒ [2] ⇒ [0] ⇒ [ENT]

FUNCTION MENU

| OPER MODE | AUTO PRINT | | | CRT OFF | NEXT |

CRT

POWER | ERROR | [F1] [F2] [F3] [F4] [F5] [F6]

KEYBOARD

[F 1] ~ [F 6] [FUNCTION] KEYS
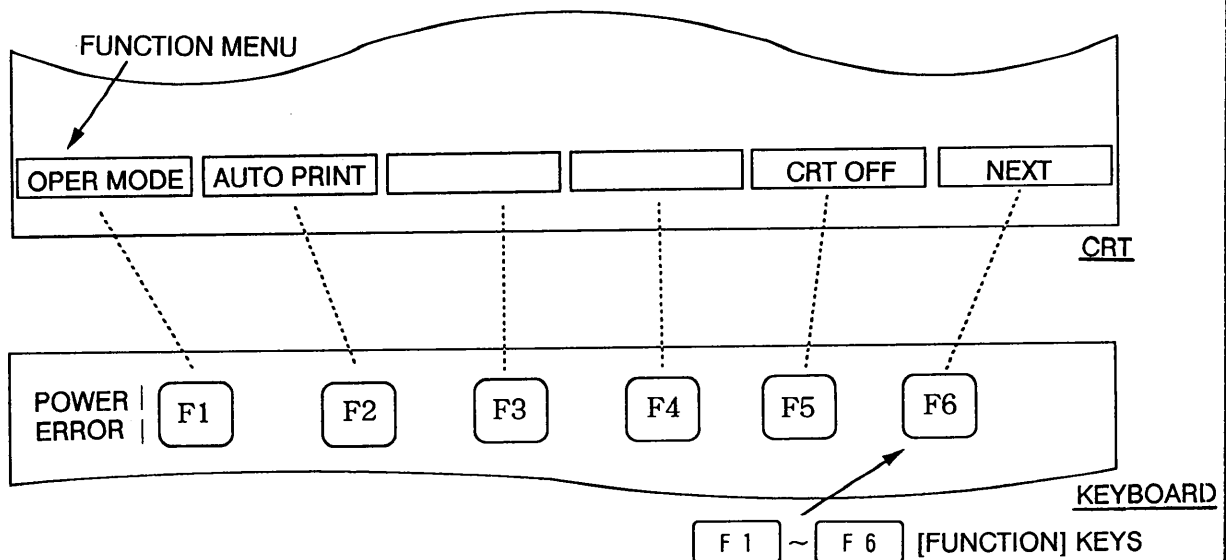
To select the OPER(ating) Mode menu, for example, press [F 1].

SYSTEM (Operating Mode) INITIALIZATION

CALL UP SYSTEM INITIALIZATION MENU	[MENU] ⇒ [2] ⇒ [0] ⇒ [ENT] | OPER MODE | AUTO PRINT | | | CRT OFF | NEXT |
TO SELECT OPERATING MODES	[F 1] - - -> The OPER Mode menu is displayed, as shown at the top of the next page. OPER Mode data is retained in the memory whenever the power is turned off. (To read OPER mode data stored on a FD, press [F 2]. To escape from this mode, press [ENT].)

	DATE/TIME <u>JST</u> UTC . . . (time standard)
	DATE/TIME READ <u>AUTO</u> MAN . . . (AUTO: SATNAV/GPS required)
	TEMPERATURE READ <u>AUTO</u> MAN . . . (AUTO: temp. indicator required)
	L/L POSITION READ <u>AUTO</u> MAN . . . (AUTO: Navigation aid required)
	NAVIGATION LORAN A LORAN C DECCA DR OMEGA <u>SATNAV</u> GPS
	RECEIVING MODE <u>AUTO</u> MAN . . . (after power is applied satellite
	                                         forecast calculation is initiated)
	AUTO TEMP CALIB <u>ON</u> OFF . . . (automatic temperature calibration
	                                      for each satellite. Compensation
	                                      value is set on MENU "14".)
	AUTO IR <u>ON</u> OFF⎫. . . (automatic recording after picture is
	CMT REC VIS <u>ON</u> OFF⎭ completely received)
	              (00:00-00:00) . . (time range for automatic visible-light
	                                       picture recording)
	RTTY SHIFT WIDTH <u>850</u> 425⎫
	SHIFT MODE <u>NOR</u> REV⎬ . . . (receiving mode of internal teletype)
	BAUD RATE <u>50</u> 75⎭
	AUTO CHART DISPLAY <u>ON</u> OFF . . . (chart is automatically displayed
	                                       after picture is completely received)
	  &boxed; SAVE FD &boxed; &boxed; LOAD FD &boxed; (Saving data to FD/loading data from FD for all
	                              modes above)

SET EACH MODE **(from "date/time" to** **"auto chart display")**	[↑] [←][→] [↓] Locate the cursor on the mode desired, by operating the arrow keys. The selected mode is underlined.
TO SAVE DATA TO FD	[F 1] (takes approx. 10 sec.)
TO REGISTER SELECTIONS	[ENT] (Press to register selections and escape from OPER mode.) (After [ENT] is pressed, satellite forecast, which takes several seconds to complete, commences if the automatic receiving mode is selected.)
TO RETURN CONTROL TO LAST USED DISPLAY SCREEN	[ESC] ⇒ [ESC] (TWICE)

CONFIRMING ORBITAL DATA

CALL UP ORBITAL DATA MENU	[MENU] ⇒ [2] ⇒ [ENT]
	ORBITAL DATA YR/MO/DA | SYSTEM A	SYSTEM B	SPARE SAT	F D A	F D B
NOAA 10	NOAA 11	NOAA 00	NOAA 10	NOAA 11
F 137.50 MHz	F 137.62 MHz	F 000.00 MHz	F 137.50 MHz	F 137.62 MHz
T '88/12/03 00:43'01.614	T '88/12/03 01:03'27.381	T '00/00/00 00:00'00.000	T '88/11/27 01:14'45.525	T '88/11/27 00:22'02.729
C 5121.62	C 5078.33	C 0000.00	C 5121.59	C 5078.34	 [COMMENT DSPL] [SAVE FD] [-LOAD FD] [MANUAL ENT] [SAT UPDATE]
CONFIRMATION	If DATE/TIME data 10 days before is displayed or when all zeroes are displayed, orbital data should be updated.
TO EXIT	[ESC] ⇒ [ESC] (TWICE) ----→ Control is returned to last used display screen.

3

UPDATING ORBITAL DATA
(Performed automatically when SU-18 is interfaced with an all-wave receiver. Manual updating should be done weekly.)

PREPARATION	**(1) AUTOMATIC ENTRY**
	The all-wave receiver is properly tuned when the two LED's of the DTY tuning indicator light alternately.
CONFIRM RTTY RECEIVING CONDITION	[MENU] ⇒ ▱ 1 ⇒ [8] ⇒ [ENT]
	┌────────────────────────────────┐ SU-18 RTTY CHECK 0 1 2 3 4 5 6 7 8 9 0 1 2 3 - - - - - - - - - - - - - - - - 7 8 9 └────────────────────────────────┘
	NOTE: If the data contains errors (for example, randomly placed question marks [?] or exclamation marks [!]), change to another freq.
TO RETURN CONTROL TO LAST USED DISPLAY SCREEN	[ESC] ⇒ [ESC]
	(2) MANUAL ENTRY
PREPARATION	Orbital Data
CALL UP ORBITAL DATA MENU	[MENU] ⇒ ▱ 2 ⇒ [ENT]
MANUAL ENTRY	[F 4] ┈┈→
	S 7232.334 M -2.80984 M -2.64624 M -.____ R 0.98284 R 0.99206 R _.____ C 5121.62 C 5078.33 C ____.__ [SYSTEM A] [SYSTEM B]
SPECIFY SATELLITE	[F 1] ⇒ ▱ 1 ⇒ [0] ⇒ [ENT]
	(To select 137.50MHz.)

ORBITAL DATA

SYSTEM A	SYSTEM B	SYSTEM A	
NOAA 10	NOAA 11	NOAA10	SELECT A OR B WITH FUNCTION KEY.
F 137.50 MHz	F 137.62 MHz	F 137.50 MHz	1 3 7 . 5 0 M H z A 1 3 7 . 6 2 M H z B
T '88/12/03 00:43'01.614	T '88/12/03 01:01'...	T '_/_/_	

ENTER ORBITAL DATA	T : [8] ⇒ [9] ⇒ [0] ⇒ [1] ⇒ [0] ⇒ [1] ⇒ [ENT]
	(other data) YR (last 2 digits) MO DAY
UPDATING ANOTHER SATELLITE	[F 2] ⇒ ▱ 1 ⇒ ▱ 1 ⇒ [ENT] ─▸ Enter data as above. (To select 137.62MHz)
TO EXIT	[ESC] ══⟹ [ESC] ⇒ [ESC] ┈┈▸ Returns control to last used display screen. Takes several seconds to change screen.

4

SAVING/LOADING ORBITAL DATA ON FD

PREPARATION	Insert FD containing data to be saved/loaded.
CALL UP ORBITAL DATA MENU	`MENU` ⇒ ▰ `2` ⇒ `ENT` ---→
	(Before loading data, confirm that orbital data stored on the FD is not older than system data. Then, `F 3` ⇒ `ENT` .)
SELECT FD SAVE	`F 2` ---→
	NOTE: Confirm that orbital data stored on the FD is older than system data.
SAVE TO FD	`ENT`
TO RETURN CONTROL TO LAST USED DISPLAY SCREEN	`ESC` ⇒ `ESC`

ORBITAL DATA

SYSTEM A	SYSTEM B	SPARE SAT	FD A	FD
NOAA 10	NOAA 11	NOAA 00	NOAA 10	NOAA
F 137.50 MHz	F 137.62 MHz	F 000.00 MHz	F 137.50 MHz	F 137.62
T '88/12/03 00:43'01.614	T '88/12/03 01:03'27.381	T '00/00/00 00:00'00.000	T '88/11/27 01:14'45.525	T '88/11/ 00:22'02
C 5121.62	C 5078.33	C 0000.00	C 5121.58	C 5078.34

`COMMENT DSPL` `SAVE FD` `LOAD FD` `MANUAL ENT` `SAT UPDATE`

ORBITAL DATA

SYSTEM A	SYSTEM B	FD A	FD B	
NOAA 10	NOAA 11	NOAA 10	NOAA 11	ORBITAL DATA
F 137.50 MHz	F 137.62 MHz	F 137.50 MHz	F 137.62 MHz	SAVE ?
T '88/12/03 00:43'01.614	T '88/12/03 01:03'27.381	T '88/11/27 ·01:14'45.525	T '88/11/27 00:22'02.72986	Yes ENT No ESC
G 082.8258	G 087.9472	G 084.8666	G 071.6522	
E 0.00142788	E 0.00126152	E 0.00143152	E 0.00126806	

CONFIRMING CIF DATA

CONFIRMATION	CIF connector is securely plugged in.
CALL UP SYSTEM INITIALIZATION MENU	`MENU` ⇒ ▰ `2` ⇒ `0` ⇒ `ENT`
CALL UP SELF TEST	`F 6` ⇒ `F 5`
CALL UP CIF DATA CHECK DISPLAY	▰ `1` ⇒ ▰ `1` ⇒ `ENT`
	SU-18 CIF/NMEA RCV CHECK 0 1 2 3 4 5 6 7 8 9 0 1 2 3 — — — — — — — — — — — — — 7 8 9
	NOTE: Check time, L/L position and water temperature data for correctness.
TO RETURN CONTROL TO LAST USED DISPLAY SCREEN	`ESC` ⇒ `ESC` ⇒ `ESC`

5

CONFIRMING/ENTERING DATE & TIME
(Automatically executed if SATNAV or GPS is interfaced. Information is retained by a keep-alive battery whenever the power is removed.)

CONFIRMATION	Check date and time data for correctness. ⇓ If incorrect, disconnect CIF line and proceed to next step.
CALL UP DATE/TIME MENU	[MENU] ⇒ [3] ⇒ [ENT] The time at the moment [ENT] key is pressed is displayed.
ENTER DATE AND TIME	□⇒□⇒□⇒□⇒□⇒□ ⇒ [ENT] YR (last 2 digits) MO DA □⇒□⇒□⇒□⇒□⇒□ ⇒ [ENT] HR (24HR) MIN SEC (UTC) Press [ENT] in synchronization with time signal. ⇓ Returns control to last used display screen. If update is not required; [ESC] ⇒ [ESC]

Display callouts (upper figure):
```
AUTO RCU  ·POS/TEMP·
CHART ON    34°43'N
'89/05/10   135°21'E
09:05'08"   +07.0°C
         JST    891-2
         [°C] ·PIC DATA·
         17.75  NOAA 10
```
present date and time

Update display:
```
** DATE/TIME **
 '88/12/06
 2:34:56 UTC
 * UPDATE
 _/_/_?
 _:_:_?
 START?
```

CONFIRMING/ENTERING L/L POSITION & WATER TEMPERATURE (at own ship)

CONFIRMATION	Check "POS/TEMP" data for correctness. ⇓ If incorrect, disconnect CIF line and proceed to next page.

Display callouts (lower figure):
```
AUTO RCU  ·POS/TEMP·
CHART ON    34°43'N      ← Ship's position
'89/05/10   135°21'E
09:05'08"   +07.0°C      ← Water temperature
         JST
         [°C] ·PIC DATA·
         17.75  NOAA 10
```

CALL UP POSITION/ TEMPERATURE MENU ENTER L/L POSITION	`MENU` ⇒ `�$ 4` ⇒ `ENT` ‑‑‑‑‑‑‑‑‑> `□` ⇒ `□` ° ⇒ `□` ⇒ `□` ′ ⇒ { `N` / `S` } ⇒ `ENT` (LAT) `□` ⇒ `□` ° ⇒ `□` ⇒ `□` ⇒ `□` ′ ⇒ { `E` / `W` } ⇒ `ENT` (LON)	** POS/TEMP ** 12˚34'N 123˚45'E 12.3˚C * UPDATE * _ _ ˚_ ' _? _ _ ˚_ ' _? _ _ . _ ˚C?
ENTER TEMPERATURE	`□` ⇒ `□` . ⇒ `□` °C ⇒ `ENT` Returns control to last used display screen.	If update is not required; `ESC` ⇒ `ESC`

RECEIVING
(If the automatic receiving mode is selected, satellite forecast is conducted automatically. Do not transmit on 27MHz during receiving.)

CONFIRMATION	(1) Check orbital data, date and time and L/L position for correctness. (Refer to pages 3~7.) (2) If "AUTO CMT REC" is selected, insert CMT. Recording commences after picture is completely received.
CALL UP RECEIVE PREDICT MENU	`MENU` ⇒ `▟ 1` ⇒ `▟ 1` ⇒ `ENT` ‑‑> [CALCULATION SKIP]
PREDICT (Receiving times which are 10 minutes or later of present time can be calculated.)	`F 1` (calculation) ‑‑> *PREDICT* CALCULATING (keys inoperative during calculation) 17.75 NOAA 10 16.75 '89/05/10 15.75 07:18'JST 14.75 I R 1 13.75 COLOR No. 12.75 ZOOM: x2 11.75 ∆t=-03.0˚C 10.75 ∆X=+00dots 9.75 ∆Y=+00dots 8.75 7.75 6.75 5.75 4.75 3.75 2.75 ¦ approx. 5~20 sec. *PREDICT* NOAA 10 '88/12/07 18:29'JST EAST (Keys operative)
TO CANCEL RECEIVING (MAN mode), TO CALCU-LATE NEXT RECEIVING TIME (AUTO mode)	`F 2` (skip)

TO TURN OFF ONLY CRT POWER (RECEIV-ING/AUTO REC ARE EXECUTED.)	`MENU` ⇒ `▟ 2` ⇒ `0` ⇒ `ENT` ⇒ `F 5`
	 To return control to last used display screen;
	 `MENU` ⇒ `ESC`

RECEIVING	The sequence of receiving is as follows.

LOCATION OF MESSAGE
MESSAGE

F | 30 MIN BFR. |

↓ Time message is displayed every 5 min.

A | END KEY HANDLING |

F | 5 MIN BFR |

Keys are inoperative.

↓

B | GRID CALCULATION | (painting of grid begins.)

↓

C | RCV AWAIT |

When receiving begins.

↓

D | RECEIVING | (∗)

(∗)"PICTURE
PROCESSING"
is simultaneously   approx. 8 min. 30 sec. later.
displayed at lower
right-hand side of
screen.

↓

D | RCV OK |

"RCV ABNORM" is dis-
played when the orbital path
of the satellite is east or
west.

↓

GRID CALIBRATION

approx. 20 sec.

E | COORD CONV | Only when "chart display" is
selected at OPER Mode.

approx. 1 min. for 1000pt
↓ chart.

"PICTURE PROCESS-
ING" is erased and a buzzer
is released.

Automatic recording and printing are executed if Auto. CMT REC and Auto Print Mode (page 17) are selected. If automatic receiving is selected, satellite forecast is automatically executed.
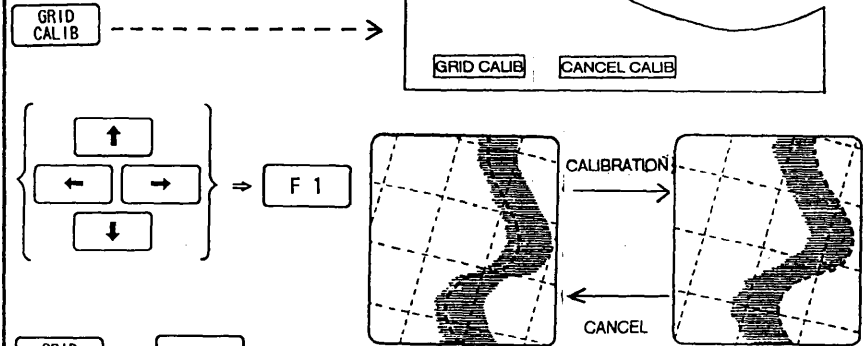
GRID CALIBRATION
**(For aligning chart with picture. Not operative in × 0.5 zoom.)**

PREPARATION	(1) Perform calibration on area which you use often.
	(2) For ease of calibration, enlarge a nearby island, coastline, etc. Refer to page 14.
	(3) If necessary, perform shade range enhancement. Refer to page 14.
CALIBRATION	[GRID CALIB] – – – – – – – – – → [GRID CALIB] [CANCEL CALIB]
	{ [↑] [←] [→] [↓] } ⇒ [F 1] CALIBRATION / CANCEL
TO CANCEL CALIBRATION	[GRID CALIB] ⇒ [F 2]
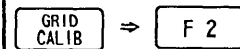
TEMPERATURE CALIBRATION
(Calibration by own ship pos. [no clouds or fog overhead of own ship] or by cursor pos. [where no clouds or fog overhead of cursor pos.])

CONFIRMATION	Check water temperature data for correctness.
	([MENU] ⇒ [4] ⇒ [ENT])
CALIBRATION BY OWN SHIP'S L/L POSITION	[TEMP CALIB] - - - - - → [TEMP CALIB] [OWN SHIP POS] [CURSOR POS] [AUTO CALIB] – – – [CANCEL CALIB]
	[F 1] (own ship pos)
CALIBRATION BY CURSOR POSITION	[TEMP CALIB] ⇒ [F 2] - - - - - → □ _._℃ ? (– 16.0 ~ + 47.5℃) [+/–] (Cross cursor appears.)
	{ [↑] [←] [→] [↓] } Place the cross cursor where no clouds or fog exists.
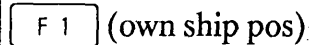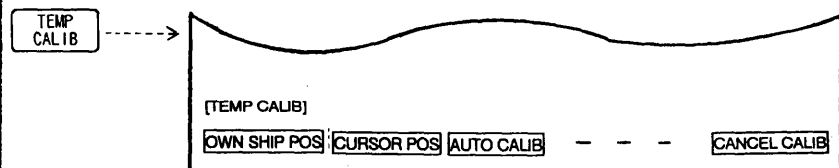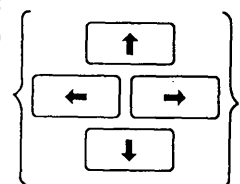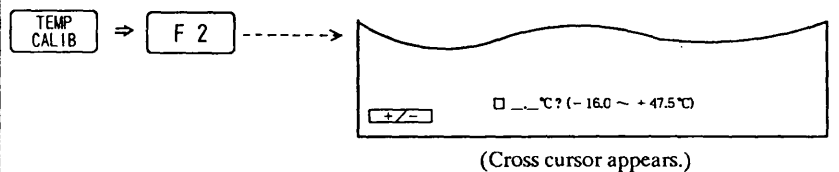
ENTER TEMP. DATA	[F 1] ("+" or "–" indication is presented alternately every pressing of this key.) °C [ ] ⇒ [ ] . ⇒ [ ] ⇒ [ENT] (Temp. data) ↓ Returns control to last used display screen. NOTE 1. Input temp. value may be differrent from value displayed at the lower right-hand side of the screen, since inputted value is rounded off to nearest 0.25°C. (EX.) <u>Input value</u> <u>Displayed value</u> 12.3 12.25 12.8 ⇒ 12.75 12.9 13.0 NOTE 2. Δt value is used as a temperature calibration value for a satellite.
TO CALIBRATE DISPLAYED PICTURE	[TEMP CALIB] ⇒ [F 3] (Compensation value, which is set on MENU "14", becomes effective for presently displayed picture.) NOTE: This function is inoperative for pictures recorded using program version number-12 and earlier.
TO CANCEL CALIBRATION	[TEMP CALIB] ⇒ [F 6]

AUTOMATIC TEMPERATURE CALIBRATION
(Temperature errors generated by a satellite itself can be automatically compensated each time a satellite signal is received.)

PREPARATION	Turn the automatic temperature calibration function on in the OPER Mode.

CALL UP TEMP. CALIB DATA INPUT MENU	[MENU] ⇒ ▶ 1] ⇒ ▶ 4] ⇒ [ENT]
	
	** TEMP CALIB DATA **
	  SYSTEM A NOAA 10 00.0°C
	  SYSTEM B NOAA 11 00.0°C
	
	** UPDATE **
	SYSTEM [ ] ?
	
	[SYSTEM A] [SYSTEM B]

SPECIFY SATELLITE	[F 1] - - - - ⇒ SYSTEM A (137.50 MHz → NOAA 10) [F 2] - - - - ⇒ SYSTEM B (137.62 MHz → NOAA 11) ** UPDATE ** SYSTEM A ☐ 00.0°C ? [+] [−]

ENTER TEMP. CALIBRATION DATA	[F 1] - - - - ⇒ " + "
	
	[F 2] - - - - ⇒ " − "
	
	☐ ⇒ ☐ ⇒ ☐ ⇒ [ENT]
	(calib value = Δt value)
	
	⋮
	⇓
	Returns control to last used display screen.
	
	NOTE 1. Input calibration value may be different from value displayed as "TEMP CALIB DATA" at the top of the screen.
	
	(EX.) Tenth's digit of input data Tenth's digit of displayed data
	      0,1,9 0
	      2 ~ 3 ⇒ 2
	      4 ~ 6 5
	      7 ~ 8 7

RECORDING
(Received picture is automatically recorded when automatic recording mode is selected. However it is uncompensated raw data.)

|	
PREPARATION	(1) Insert a cassette tape. (storage capacity: 41 pictures, or 40 pictures in the case of simultaneous recording of IR/VIS pictures. (2) Insert a floppy disk (FD) for recording. When picture is recorded on a FD, all data (system program, etc.) stored in the FD will be erased. (Storage capacity: 1 picture/FD. Recording time to FD is much faster than that to CMT.)
CALL UP CMT RECORD MENU	(1) Cassette Tape [MENU] ⇒ [5] ⇒ [ENT] [IR PIC REC] [VIS PIC REC] [SIMUL REC] [FILE LIST]

SELECT MEMORY BANK TO BE RECORDED	[F 1] (Infrared picture memory --- MEMO 1)

[F 1] (Infrared picture memory --- MEMO 1)

[F 2] (Visible-light picture memory --- MEMO 2)

[F 3] (Both IR/VIS memory)

[F 4] (File search)

NOTE: This unit has two picture memory banks to which data can be stored. The memory bank where the presently displayed picture is saved is shown at the right-hand side of the screen. See table below. For example, if "1•VIS" is displayed, the pesently displayed picture (visible-light picture) is saved in the infrared picture memory. Then, to record the picture saved in the infrared picture memory, you would press [F 1] . At this time, file number where the picture is recorded is displayed at the bottom of the screen.
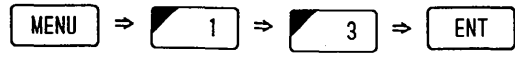
Memory bank in use	Type of picture	Indication at right-hand side of the screen
Infrared (MEMO 1)	Infrared	IR
	Picture after processing	IR1
	Visible-light	1•VIS
Visible-light (MEMO 2)	Visible-light	VIS
	Picture after processing	IR2
	Infrared	2•IR

TO RETURN CONTROL TO LAST USED DISPLAY SCREEN

[ESC] ⇒ [ESC]
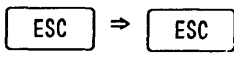
CALL UP FD SAVE/LOAD MENU

(2) Floppy Disk

[MENU] ⇒ [/ 1] ⇒ [/ 3] ⇒ [ENT]

[FD SAVE/LOAD]

[SAVE FD] [LOAD FD]

When picture data is recorded to FD, contents of FD will be erased.

SAVE TO FD

[F 1] ⇒ [ENT]